Catalogue of American Amphibians and Reptiles.

ANDERSON, JAMES D. 1978. *Ambystoma rosaceum.*

Ambystoma rosaceum Taylor
Tarahumara salamander

Ambystoma rosaceum Taylor, 1941:143. Type-locality, "Mojarachic, Chihuahua," elevation about 6,000 ft (1,828 m). Holotype, Field Museum of Natural History 100079 (formerly Edward H. Taylor-Hobart M. Smith 23054), a larva collected in 1939 by Irving Knobloch.

Ambystoma fluvinatum Taylor, 1941:144. Type-locality, "Mojarchic, Chihuahua," elevation about 6,000 ft (1,828 m). Holotype, FMNH 100108 (formerly EHT-HMS 25383), a larva collected 20 June 1940 by Irving Knobloch.

Ambystoma rosaceum rosaceum Shannon, 1951:468. First use of the trinomial.

Ambystoma rosaceum nigrum Shannon, 1951:466. Type-locality, "El Salto, Durango," Mexico. Holotype, U.S. Nat. Mus. 123581, collected 8 May 1946 by R. G. Miller.

Ambystoma rosaceum sonoriensis Shannon, 1951:468. Type-locality, "32 miles south of the Arizona border;" given as "Pinetos Camp, Sonora, Mexico" by Cochran (1961). Holotype, USNM 17253, a larva collected 14 June 1891 by P. L. Jouy.

• CONTENT. No subspecies are presently recognized (see Anderson, 1961).

• DEFINITION. A moderately-sized species of *Ambystoma*; metamorphosed adults attain a maximum of 85 mm snout-vent length (SVL), 152 mm total length (TL). Metamorphosis occurs regularly and neoteny is infrequent. Size at metamorphosis is variable: 48–62 mm SVL, 98–121 mm TL.

Metamorphosed adults are dark brown dorsally with scattered, small whitish to buff or yellowish spots. The spots may occur all over the dorsum but more frequently are restricted to the lateral surfaces. The ventral surfaces are sooty brown to cream. Faint light spotting or mottling may be present on the chin or along the lateral surfaces of the tail, otherwise the venter is unmarked.

Costal grooves range from 10–12 with a mean of 11. Vomerine teeth in adults are 42–70, mean 50.4. The lingual plicae are narrow and parallel, originating from the broad posterior margin and extending to the narrowly free anterior margin of the tongue. Lateral line pits are conspicuous on the head and body. The tail, pelvic region and parotid region are highly glandular.

Small larvae from hatching (9–10 mm SVL) to 35 mm SVL are uniformly dark dorsally and pale ventrally and have no conspicuous pattern. Larvae greater than 35 mm SVL are brightly marked with light mottling or spotting (whitish to pinkish) on a dark brown background. The light color usually forms a distinct lateral line but is so variable that the line is often not conspicuous because of extensive mottling or spotting surrounding it. Gill rakers on the anterior portion of the third gill arch range from 9–14, mean 11.2. At metamorphosis the animals darken and the light color coalesces to small spots. However, the metamorphic pattern is very variable: some animals are highly mottled. Mottling is quickly lost, but some spotting remains throughout life. The larvae are of the pond type (Anderson and Webb, 1977), although balancers are absent. Neotenic larvae are heavily mottled with no trace of the linear pattern usually found in larvae between 35 mm SVL and metamorphosis.

• DIAGNOSIS. Adults having dark dorsal coloration with light, sometimes faint, spotting and pale venters, combined with brightly marked larvae having low gill raker counts, separates *rosaceum* from all other species of *Ambystoma* in Mexico.

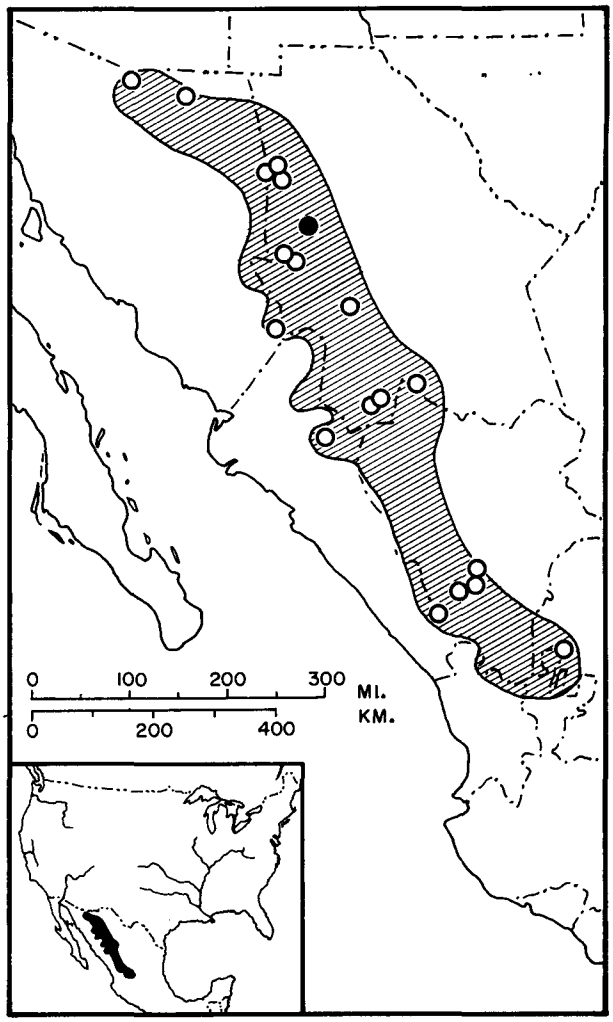
• DESCRIPTIONS. Anderson (1961) described metamorphosed adults and ontogenetic variation in color pattern. Van Devender (1973) described color pattern of adults from Chihuahua and compared them to sympatric *A. tigrinum*. Taylor (1941), Shannon (1951), and Anderson (1961) provided detailed descriptions of larvae. Anderson and Webb (1978) described eggs, hatchling larvae, and neotonic individuals. Tihen (1958) discussed skeletal characteristics of related species and implied that some of these applied to *rosaceum*.

• ILLUSTRATIONS. Taylor (1941) illustrated larval type specimens, including some under the name *fluvinatum*. Shannon (1951) figured a larva from Durango and Anderson (1961) illustrated ontogenetic changes in color pattern and metamorphic changes. Anderson and Webb (1977) presented a photograph of eggs and egg deposition site.

• DISTRIBUTION. This species is found at high elevations (5,500–10,200 ft; 1,675–3,110 m) in the Sierra Madre Occidental from northeastern Sonora (within 32 mi of the Arizona boundary) to western Zacatecas, including the states of Chihuahua, Durango, and Sinaloa. Terrestrial adults live in pine-oak, pine, and fir forests, but are also recorded from grassland habitats at high elevations (Van Devender, 1973; Van Devender and Lowe, 1977). Larvae inhabit a range of envrionments including slow, meandering streams, strongly flowing, rocky streams, wells, and artificial, spring-fed pools. Anderson (1961) summarized specific locality records. Gehlbach (1965) gave additional localities and Anderson and Webb (1977) extended the range into Zacatecas. Van Devender (1973) gave additional localities in Chihuahua, including areas of sympatry with *A. tigrinum*.

• FOSSIL RECORD. None.

• PERTINENT LITERATURE. Taylor (1941) considered the relationships obscure and specifically excluded affinity with the *A. tigrinum* group. Tihen (1958) discussed systematic status and placed *A. rosaceum* in the *tigrinum* species group of the subgenus *Ambystoma*. Geographic variation was treated by Shannon (1951), Anderson (1961), and Van Devender (1973). Anderson (1961) dis-



MAP. The solid circle marks the type-locality, open circles indicate other localities.

cussed life history, habitat, distribution, and ontogenetic variation. Anderson and Webb (1978) gave additional details on these topics and also discussed breeding season, eggs, egg deposition sites, and neoteny. Webb and Baker (1962) described habitats in Durango and Van Devender (1973) discussed sympatry with *A. tigrinum*, variations in color pattern, and larval and adult habitats in Chihuahua. Gill raker counts were given by Gehlbach (1965). Welbourn and Loomis (1969) described the ectoparasite *Hannemania monticola* (Acarina, Trombiculidae) from *A. rosaceum*. Smith and Taylor (1948) and Tihen (1969) include *rosaceum* in keys to Mexican species.

• ETYMOLOGY. The specific name *rosaceum* is from the Latin *rosa*, meaning rose, in apparent reference to the pinkish or reddish color of some larvae. The vernacular name was first used by Van Devender (1973) in reference to the Tarahumara Indians who inhabit some of the species' range and whose name is sometimes applied to part of the Sierra Madre in Chihuahua.

COMMENT

Although egg deposition and larval development occur in montane streams, neither adults nor larvae show any special modifications for stream life. Eggs are deposited under rocks and logs in streams (Anderson and Webb, 1978), a characteristic shared with the somewhat more stream-adapted *A. ordinarium*.

In Sinaloa, eggs are deposited in January and February, but breeding occurs in June and July in Chihuahua and Durango (Anderson and Webb, 1977). Additional study is needed.

The courtship and spermatophore have not been described.

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